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(54) Computer system for linking a group of searchable websites

(57) A computer system for linking a group of searchable websites. The computer system comprises a receiving unit for receiving a search command and a website to be searched, a first interface for approaching a link data base, which, in response to the reception of the website to be searched, outputs a subgroup of websites associated with the website; a second interface which, in response to the reception of the subgroup of websites originating from the first interface, outputs the received search command to each website of the subgroup of websites; which second interface is arranged for receiving references from each of the websites of the subgroup, in response to the outputted search command; a processing unit for controlling first and second interfaces and for combining the references received from the websites into a combined list of search results; and an output unit for outputting the search result list.

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Description

[0001] The invention relates to a computer system for linking a group of searchable websites, each of which, in response to the reception of a first search command, outputs references referring to information files accessible through these references and included in the website, which information files are associated with the search command.

[0002] Such a computer system forms a well-known configuration for websites which can be approached via, for instance, the Internet. A search command can then consist of one or more keywords or parts of keywords and/or combinations thereof connected or not connected by means of search operators such as Boolean operators. Usually, the key words are organised in reference data bases such as an index data base and/or a key word list which can be thematically organized. From the reference data base, a key word can be selected, thus forming a reference to an information file generally included in an information data base, which information file is opened by means of the respective key word.

[0003] A problem in the management and maintenance of websites is that for a consistent information representation, high demands are imposed on the structure of such a site, which, as a result, has a highly specific structure and cannot be easily integrated with other sites. That is why, in practice, it proves to be particularly awkward to create links between different sites, if one wants to make information available one-sidedly or reciprocally. Often, the only solution is then, with the combined information contents of the different sites, to form a new site, in which the information content is combined into a new, once again specific, structure. Such a solution has organisational disadvantages, because the separate sites often have their own editors, who then have to agree on how the new, combined site is to be arranged. To such a solution, also, technical drawbacks are attached, which may sometimes render it difficult to separately manage and to keep up to date the information originating from the separate sites. Further, such a solution is also highly inflexible, if a link is selected, it is definite, and it is not easy to undo such a connection and/or to enter into further links with third parties.

[0004] The object of the invention is to provide a solution to the above-mentioned problems and to provide a system and method, wherein such drawbacks do not occur and links can be made in an easy and flexible manner. To that end, the invention provides a computer system according to the above-mentioned opening paragraph, the system further comprising:

a receiving unit for receiving a first search command and a website to be searched;
a first interface for approaching a link data base, which, in response to the reception of the website to be searched, outputs a subgroup of websites associated with the website;
a second interface, which, in response to the reception of the first search command and the subgroup of websites, originating from the first interface, outputs a second search command to each website of the subgroup of websites; which second interface is arranged for receiving references from each of the websites of the subgroup, in response to the outputted second search command;
a processing unit for controlling first and second interfaces and for combining the references received from the websites into a combined search result list; and
an output unit, for outputting the search result list.

[0005] By using such a link data base, which controls the links between the sites, it is possible to make connections with sites and undo them again in an easy manner, while it can be indicated to a highly specific extent, per site, with which of the further sites contacts are maintained. As a consequence, it is possible to have a site function virtually unmodified while, if desired, the site can be expanded with information from other sites.

[0006] In a preferred embodiment, the receiving unit is arranged for receiving a reference selected by a user, and the output unit is arranged for outputting an information file associated with the selected reference. The output unit can then output a display command indicating from which of the group of websites a reference and/or information file originates. As a result, the advantage is achieved that a "friendly" site can be opened in a completely integrated manner in the context of a website approached by a user, in that upon reception of references in response to an entered search command in such a site, also references from other sites can be outputted and displayed as if they were referring to information files from the website approached by the user. In a different configuration, an associated site can have a "known" status, wherein the information can indeed be consulted as a result of a search command in the site approached by a user, but wherein the references and files associated therewith are displayed in a separate context, so that it is clear from which website the information originates. If two sites have an "unknown" status in relation to each other, information cannot be exchanged reciprocally.

[0007] In a preferred embodiment, the system comprises a number of searchable websites, each comprising a reference data base and an information data base. The reference data base can comprise lists of thematically organised key words, which are coupled to an information file in the information data base such that a key word forms a reference for retrieving an information file from the information data base.

[0008] In a further preferred embodiment, the system comprises a link data base for outputting, in response to the reception of a first website to be searched, a subgroup of websites associated with the website. Preferably, the link data base comprises at least one coupling

list for outputting, in response to the reception of a first search command for searching the first website, a second search command, associated via the coupling list, for searching a second website, associated with the first website. Due to such a structure of the link data base, it not only becomes possible to approach a set of associated websites on the basis of a search command in or from the context of a website, but it is also possible to modify the search command per website by means of the coupling list. This offers the advantage that from the context of a website, with the aid of a key word list associated with the website, search terms related therewith from other websites are opened.

[0009] The invention further relates to a computer, comprising a sending unit for sending a search command and a website to be searched to a receiving unit of a computer system according to at least one of the above-mentioned aspects, which sending unit is further arranged for sending a reference for obtaining an information file associated therewith; a receiving unit for receiving a combination of references and an information file in response to a reference selected by a user; and a display unit for displaying a search result list and a received information file, which display unit is arranged to display, in response to a reception of a display instruction, from which website a reference and/or information file originates. This computer is arranged to seek contact with the computer system according to the above-mentioned aspects, so that via this computer, a user can obtain access to the information which is sent via that system.

[0010] The application further relates to a method for searching information items from a group of searchable websites, each of which, in response to the reception of a search command, output references which refer to information files accessible by means of those references and included in the website, which information files are associated with the search command. The method according to the invention is characterized by the following steps: making available commonly available link information, which assigns an individual subgroup of associated websites to each of the group of websites; receiving a search command from a context of a first of the websites, the search command comprising a search command, consulting link information for the first of the websites; searching for references to those of the information items which are associated with the search command in the subgroup of websites which, according to the link information, are associated with the first of the websites; and outputting a combination of references received from each of the websites of the subgroup of websites as a response to the search command of the context mentioned.

[0011] The invention will be further elucidated with reference to the description of the drawings. In the drawing:

Fig. 1 shows a preferred embodiment of the computer system of the invention;

Fig. 2 shows a preferred embodiment of a user computer for approaching the computer system of the invention;

Fig. 3 shows a diagram with the steps of the method according to the invention represented therein; and

Fig. 4 shows a schematic representation of a preferred embodiment of a link data base according to the invention.

[0012] In Fig. 1, schematically, a configuration of websites 1 is represented, which can be approached via the Internet 2. The platform for the websites 1 is formed by a computer system 3 comprising computers 4 connected to each other via the Internet 2. For the sake of convenience, the structure of one of these computers 4 is further represented; other computers have a similar architecture. A computer 4 comprises a data storing medium 5 in which the website 1 is stored and a communication unit 6 with the aid of which the website 1 can be approached via the Internet 2. The website 1 is formed by an information data base 7 for comprising information files 8 which are opened by the website 1; an editing module 9 for approaching and processing the information files 8 in the information data base 7; and a reference data base 10 associated with the information data base 7. The reference data base 10 comprises references 11 for outputting information stored in the information data base 7. The computer further comprises a search interface 12 for approaching the reference data base 10. In response to the reception of a search command, the search interface 12 outputs a selection of references referring to files 8 in the information data base 7, which are associated with the search command. An output unit 13 is present for approaching and outputting files from the information data base 7, which output unit 13, in response to the reception of a reference 11, outputs a file 8 from the information data base 7.

[0013] The websites 1 are arranged so as to be highly independent of each other and are each managed by their own editing module 9, so that it is possible to add, to delete and/or to modify information. Although in the example of the drawing it is represented that the editing module 9 directly manages the files of the website 1, also, in a known manner, so-called mirror-sites can be active, which periodically obtain the identical content as a mother-site, which, itself, need not be directly accessible to users. It is also conceivable that the architecture of the computer system is different, i.e. several sites can be hosted on a central computer, instead of, each time, on different computers.

[0014] For applying the invention, a central computer 14 is provided which can be approached by a user via a receiving unit 15. The receiving unit 15 is arranged for receiving a search command and a website to be searched. The search command is entered by the user; the website to be searched can be entered but can also be derived from the context in that a user sends the search command from a particular site. The receiving

unit 15 is a functional unit of the computer, which cooperates with a modem and/or network card 6. Via the receiving unit 15, the website 1 to be searched is known to a first interface 16. As a first step in the search process, the interface 16 approaches a link data base 17, which, for each website 1, outputs an associated subgroup 18 of the group of websites 1; naturally, a subgroup 18 can also be formed by (only) the website to be searched. The link data base can further comprise from the websites 1 from the subgroup 18 of the group of websites 1 a display instruction 19, indicating from which of the group of websites 1 a reference 11 and/or information file 8 originates. The central computer 14 further comprises a second interface 20, which, in response to the reception of the subgroup 18 of websites 1 coming from the first interface 16, outputs the received search command to each of the search interfaces 12 of the subgroup 18 of websites 1.

[0015] The second interface is arranged for receiving references from each of the websites of the subgroup 18, in response to the outputted search command. A central processing unit 21 controls first and second interfaces and combines references received from the websites 1 into a combined search result list of references. The combined search result list is outputted by an output unit 22. In the combined list it can be indicated from which of the group of websites a reference originates. If such a reference is dispensed with, a complete integration of references of "friendly" sites is represented in the search result. In a different configuration, an associated site may have a "known" status, while the references are represented in a separate context, so that it is clear from which website the information originates. If two sites have an "unknown" status in relation to each other, information cannot be exchanged reciprocally.

[0016] The output unit 22 can be a printer, modem, network card or screen, representing the list on the central computer 14 itself or on a peripheral user computer or terminal 23 described in further detail hereinbelow with reference to Fig. 2.

[0017] On the user terminal 23, a search result list is represented and a user can activate a reference 11 from the result list. As a result, the receiving unit 15 receives a reference associated with the reference 11, via the second interface, the file 8 belonging to the reference 11 is retrieved from a respective website and outputted to the terminal 23, in a known manner. The executing unit is arranged for outputting an information file 8 associated with the reference 11. By sending the file via the central computer 14 to the user terminal 23 and not directly from a website 1 to be searched, it is possible to change the context of the file, so that, if desired, it is emphasized or omitted from which of the specific websites of the subgroup 18 of websites the file originates.

[0018] With reference to Fig. 2, presently, the arrangement of user terminal 23 will be discussed. In addition to known functional parts (not shown) necessary for the working of a computer, such as a processor, a memory, entering means *et cetera*, this terminal comprises a sending unit 24, a receiving unit 25 and a display unit 26. The sending unit 24 is arranged for sending a search command and a website to be searched entered by a user. In an alternative embodiment, the sending unit 24 can first send the search command to a website from the group of websites (instead of to the central computer 14) which, subsequently, from the context of that website, approaches the central computer 14 for forwarding the search command to the search interfaces 12 of the website 1 from the associated subgroup 18 to a receiving unit 15 of a central computer 14 as discussed with reference to Fig. 1.

[0019] The peripheral terminal 23 further comprises a receiving unit 25 for receiving a search result list and/or an information file 8. Through selection of a reference 11 from the search result list, a reference can be sent to the central computer 14 , which, in response to this reference, as discussed hereinabove, sends out an information file 8 with, optionally, a display instruction 19 related thereto. This information file and the search result list can be displayed by display unit 26.

[0020] Fig. 3 depicts a schematic representation of the method according to the invention. The method involves searching information items from a group of searchable websites, each of which, in response to the reception of a search command, outputs references which refer to information files accessible by means of those references and included in the website, which information files are associated with the search command.

[0021] In a first step 27, commonly available link information is made available, for instance on a central computer or a centrally accessible memory location. The link information assigns an individual subgroup of associated websites to each of the group of websites.

[0022] In a second step 28, a search command is received from a context of one of the websites, for instance in that a user makes contact with a central computer and enters a search command as well as a website where the search command is performed, or in that a user enters a search command in a website, which is forwarded from the context of that website to a central computer.

[0023] In a third step 29, the link information is consulted for the respective websites, so that a list of websites is available, which, according to the link information, are associated with the one website.

[0024] In a fourth step 30, references are searched in the websites associated, according to the link information, with the first of the websites. This search process can be a conventional search process, in which per website, on the basis of a search command, a search result is obtained of references to information items associated with the search command; alternatively, the search process can be carried out by consulting a common search index containing the reference information to information items of all, or a group of websites.

[0025] Finally, in a last step 31, a cumulated list of references is outputted which are received from each of the websites of the subgroup of websites, as a response to the search command of the context mentioned.

[0026] With reference to the table represented in Fig. 4, a preferred embodiment of the link data base will be described. As discussed with reference to Fig. 1, for each website, the link data base contains an associated subgroup of the group of websites. In Fig. 1, this is represented for the websites A, B, C and D: A is associated with a friendly subgroup of websites consisting of website B. A is further associated as known with the subgroup consisting of the website C. For B it holds that C is considered as "friendly" and A as "known". It follows from the example that the relations need not be reciprocal but are defined each time per site. The qualification "friendly" or "known" has already been discussed hereinabove and can imply, for instance, that information originating from a "known" website is represented in a different manner than information originating from a "friendly" site.

[0027] Further, in the link data base of the example of Fig. 4, each time, per associated website (i.e. both per "friendly" website and per "known" website) a so-called coupling list is included. Such a coupling list defines the relation between key word lists of different websites. This means that, for website A, a specific key word x can refer to a particular information file X of the site A, while a particular information file X' of website B is opened by means of a different key word x', being, for instance, a synonym or a more specific or more general term for the respective key word. By means of the coupling list, schematically indicated with the term AxB, the relation between x (belonging to A) and x' (belonging to B) is made. As a result, according to the example, by means of one single key word, notably x, the file X from the website A can be opened, and also the file X', which is associated by means of the coupling list with key word x' in website B.

Claims

1. A computer system for linking a group of searchable websites, each of which, in response to the reception of a first search command, outputs references referring to information files accessible by means of those references and included in the website, which information files are associated with the search command, comprising:

   - a receiving unit for receiving a first search command and a website to be searched;
   - a first interface for approaching a link data base, which, in response to the reception of the website to be searched, outputs a subgroup of websites associated with the website;
   - a second interface which, in response to the reception of the first search command and of the subgroup of websites originating from the first interface, outputs a second search command to each website of the subgroup of websites; which second interface is arranged for receiving references from each of the websites of the subgroup, in response to the outputted second search command;
   - a processing unit, for controlling the first and second interfaces and for combining the references received from the websites into a combined list of search results; and
   - an output unit for outputting the search result list.

2. A computer system according to claim 1, **characterized in that** the receiving unit is arranged for receiving a reference selected by a user, and **in that** the output unit is arranged for outputting an information file associated with the selected reference.

3. A computer system according to claim 1 or 2, **characterized in that** the output unit outputs a display instruction indicating from which of the group of websites a reference and/or information file originates.

4. A computer system according to at least one of the preceding claims, **characterized in that** the system comprises a number of searchable websites, each comprising a reference data base and an information data base.

5. A computer system according to claim 4, **characterized in that** the reference data base comprises lists of thematically organised key words, which are coupled to an information file in the information data base, such that a key word forms a reference for retrieving an information file from the information data base.

6. A computer system according to at least one of the preceding claims, **characterized in that** the system comprises a link data base, for outputting, in response to the reception of a first website to be searched, a subgroup of websites associated with the website.

7. A computer system according to claim 6, **characterized in that** the link data base comprises a coupling list for outputting, in response to the reception of a first search command for searching the first website, a second search command associated via the coupling list for searching a second website associated with the first website.

8. A computer comprising:

- a sending unit for sending a search command and a website to be searched to a receiving unit of a computer system according to at least one of claims 1 - 7, which sending unit is further arranged for sending a reference for obtaining an information file associated therewith;
- a receiving unit for receiving a list of search results and an information file, in response to a reference selected by a user; and
- a display unit for displaying a combination of references and a received information file, which display unit is arranged to display, in response to the reception of a display instruction, from which website a reference and/or information file originates.

9. A method for searching information items from a group of searchable websites, each of which, in response to the reception of a search command, each output references referring to information files accessible by means of those references and included in the website, which information files are associated with the search command, which method comprises the steps of:

- making available commonly available link information, assigning an individual subgroup of associated websites to each of the group of
- receiving a search command from a context of a first of the websites;
- consulting link information for the first of the websites;
- searching references to those of the information items which are associated with the search command in the subgroup of websites which, according to the link information, are associated with the first of the websites; and
- outputting a combination of references, received from each of the websites of the subgroup of websites, as a response to the search command of the said context.

Fig. 1

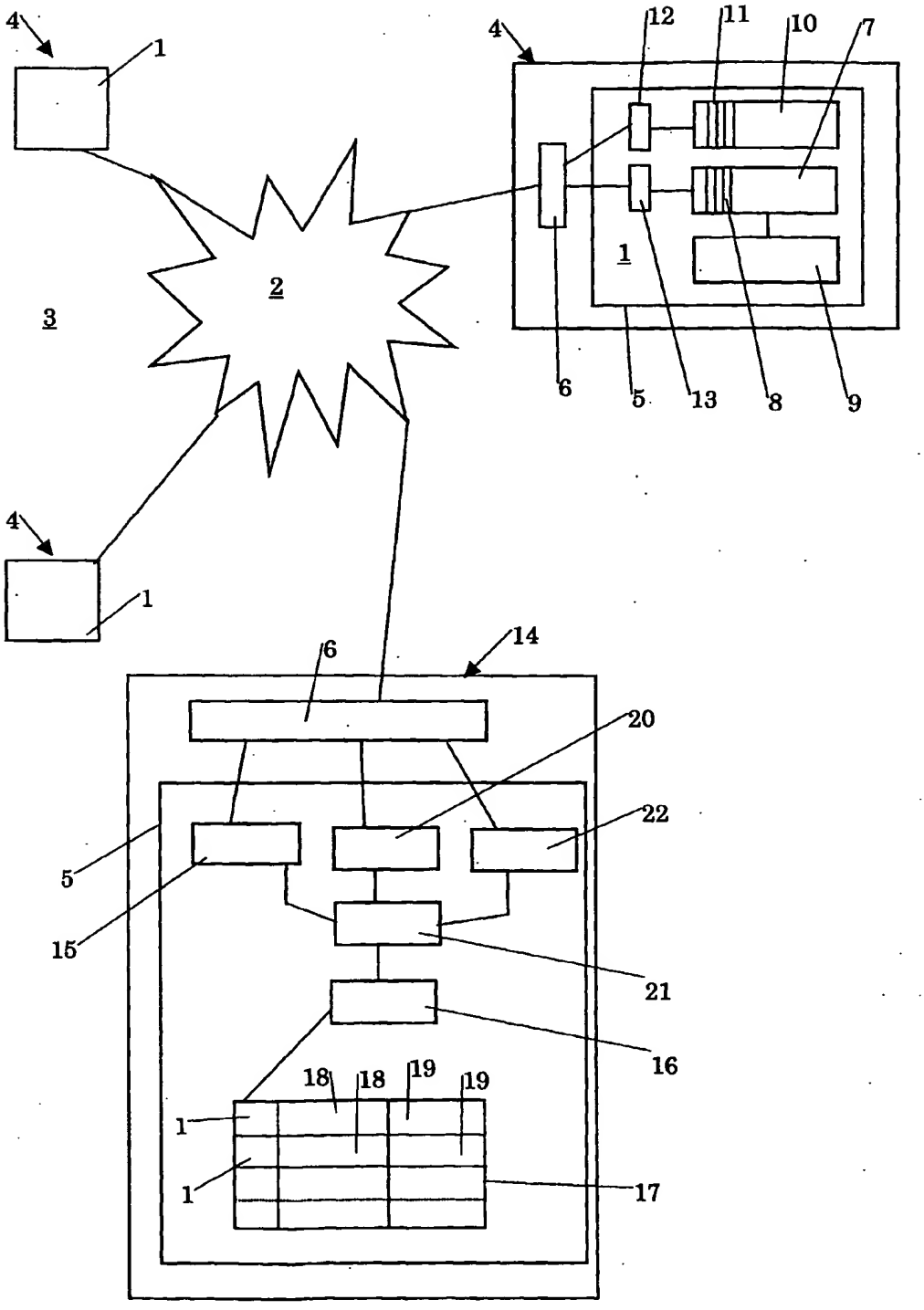

Fig. 2

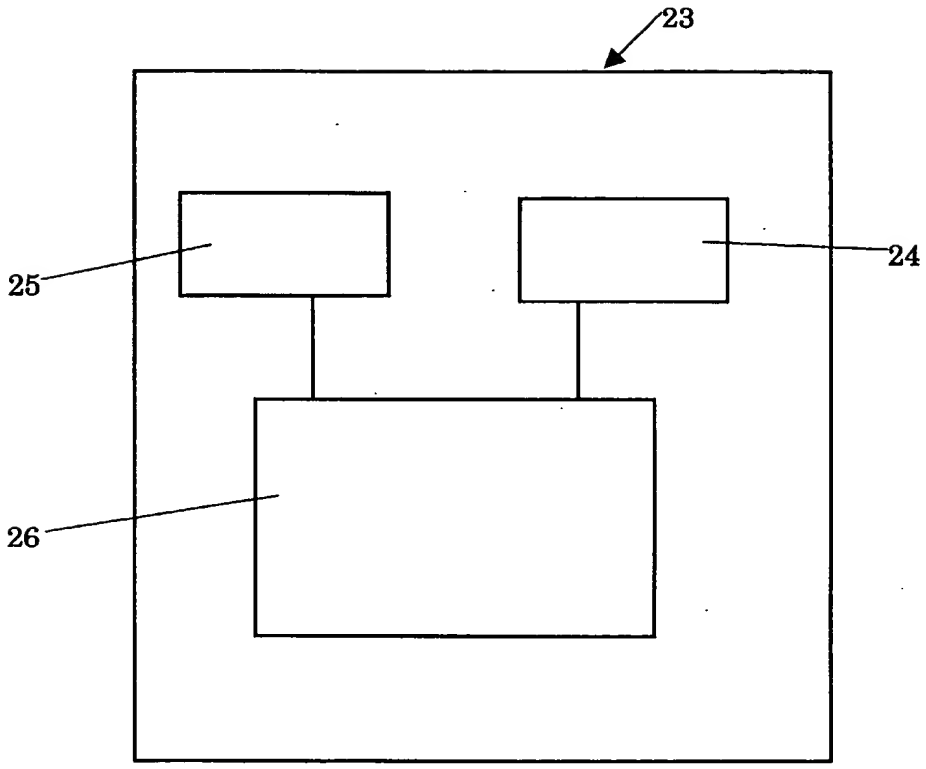

Fig. 3

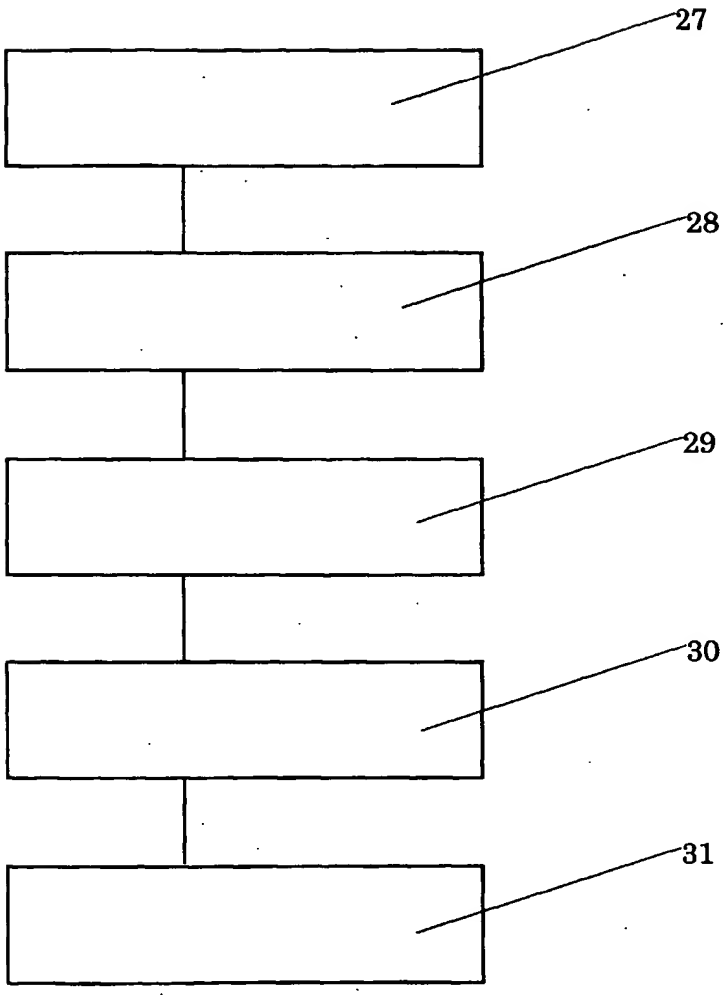

Fig. 4

Websites	Friendly		Known	
	Website	Coupling list	Website	Coupling list
A	B	AxB	C	1
B	C	BxC	A	BxA
C	A, B	CxA CxB		
D			C	1

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 07 6257

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 01 82129 A (HYLDAHL ANDERS ;MONDOSOFT AS (DK); SOENDERGAARD LAUST (GB)) 1 November 2001 (2001-11-01) * page 9, line 10 - page 12, line 17; figures 1,2 *	1-9	G06F17/30
P,X	WO 02 41164 A (WHERETHEHECKISIT COM LLP) 23 May 2002 (2002-05-23) * page 15, line 26 - page 17, line 17; figures 9-11 *	1-9	
X	SELBERG E ET AL: "THE METACRAWLER ARCHITECTURE FOR RESOURCE AGGREGATION ON THE WEB" IEEE EXPERT, IEEE INC. NEW YORK, US, vol. 12, no. 1, 1997, pages 11-14, XP000689719 ISSN: 0885-9000 * the whole document *	1-8	
A	DREILINGER D ET AL: "EXPERIENCES WITH SELECTING SEARCH ENGINES USING METASEARCH" ACM TRANSACTIONS ON INFORMATION SYSTEMS, ASSOCIATION FOR COMPUTING MACHINERY, NEW YORK, US, vol. 15, no. 3, 1 July 1997 (1997-07-01), pages 195-222, XP000702156 ISSN: 1046-8188 * page 195 - page 207; figures 1-3 *	1-9	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G06F

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 August 2003	I. SZÁNTÓ

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	ANGELACCIO M ET AL: "Local searching the Internet" IEEE INTERNET COMPUTING, JAN.-FEB. 2002, IEEE, USA, 'Online! vol. 6, no. 1, pages 25-33, XP002236619 ISSN: 1089-7801 Retrieved from the Internet: <URL:http://ieeexplore.ieee.org/iel5/4236/21094/00978366.pdf?isNumber=21094&prod=IEEE%20JNL&arnumber=978366&arSt=25&ared=33&arAuthor=Angelaccio%2C+M.%3B+Buttarazzi%2C+B.%3B> 'retrieved on 2003-03-21! * the whole document *	1-9	
A	MANBER U ET AL: "WebGlimpse-combining browsing and searching" PROCEEDINGS OF THE USENIX 1997 ANNUAL TECHNICAL CONFERENCE, PROCEEDINGS OF USENIX 1997 ANNUAL TECHNICAL CONFERENCE, ANAHEIM, CA, USA, 6-10 JAN. 1997, 'Online! pages 195-206, XP002236620 1997, Berkeley, CA, USA, USEXIX Assoc, USA ISBN: 1-880446-84-7 Retrieved from the Internet: <URL:http://citeseer.nj.nec.com/manber97webglimpse.html> 'retrieved on 2003-03-21! * page 195 - page 198 *	1-9	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

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